

Frosts.—The frosts have during the month been especially destructive in Ohio and Illinois, and others are reported in Minnesota on the 17th; Connecticut, 18th; Delaware, 18th; Illinois 16th and 18th; Indiana, 17th; New Jersey, 18th; New York 18th and 31st; Virginia 19th and 31st.

PRECIPITATION.

The general distribution of rain-fall is shown by the isohyetal on Chart No. III, from which it will be seen that the rain-fall is, on a general average, about 0.6 inches below its normal value. The largest deficiencies occur in the Gulf and Middle Atlantic States, where the rain-fall is less than one-half its usual amount. A slight excess of rain, amounting to one-quarter of its average amount, is reported from the upper Mississippi valley, the Lake region and South Atlantic coast, and a still larger excess from the St. Lawrence valley.

Cloudy days.—The cloudiness during the month has been decidedly below the average. It has been greatest in New England, where the average is from 7 to 11 cloudy days during the month; an average of 7 days is reported from New York, the Lake region and Minnesota, whence, as we proceed southward, the amount of cloud diminishes to an average of 1 or 2 days in the Gulf and South Atlantic States.

Rainy days have been, as usual, far more numerous than cloudy days, the average number being 15 over the Lower Lakes, New York and New England; 17 in Kansas and Indian Territory; 10 on the South Atlantic coast and in Tennessee, Kentucky, Missouri and Illinois.

RELATIVE HUMIDITY.

The relative humidity averages 70 per cent. along the Atlantic coast stations; 50 per cent. at stations in the neighborhood of the Appalachian ranges; 60 per cent. from the Lower Lake region to Missouri, and between 55 and 65 per cent. northward of this region.

WINDS.

The prevailing wind has been southeast to southwest throughout the Gulf States and Atlantic coast stations. It has been southeast in Kansas, Iowa and Minnesota, and west in the Lower Lake region.

Total movement of the air.—The largest total movements of the air are—at Pike's Peak, 14,808; Cape Hatteras, 11,377; Sandy Hook, 9,945; Cheyenne, 9,780; Peck's Beach, 9,500; Long Branch, 9,466; Erie, 8,969; San Francisco, 8,785; Indianola, 8,699; Cape Henry, 8,510. The lowest at: Portland, Or., 3,042; Lynchburg, 3,122; Augusta, 3,261; Montgomery, 3,802; Wytheville, 3,809; Shreveport, 3,853; Vicksburg, 3,866; Nashville, 3,894; San Diego, 3,978.

VERIFICATIONS.

The detailed critical comparison of the published Probabilities with the weather of the succeeding 24 hours shows, on the average, for the whole country, that 91.4 per cent. of the predictions have been verified.

117 Cautionary Signals have been displayed at the 43 Signal Stations on the Lakes and Atlantic coasts, of which 65 were reported well justified by the succeeding high winds, while 48 were partially justified, and 4 were too late; 49 occasions were noted on which brisk winds were not signaled, in the most of which cases, however, the winds did not come from dangerous points of the compass.

NAVIGATION.

Ice.—Ice moved out of the harbor of Escanaba on the 4th. In the eastern portion of Lake Ontario ice continued to impede navigation until the 14th. Sabago Lake, in Maine, was opened to navigation on the 4th. The navigation of the larger Lakes was continued throughout the month. Lake Champlain was generally open on the 30th of April, being the latest date for 60 years—it had been closed for 104 days—the longest period, with one exception, during this century.

The extreme depth of water in the Mississippi and its tributaries is shown by the table on chart No. III, whence it appears that at all river stations the water was, in the last week of the month, from 3 to 30 feet lower than during the first week.

TEMPERATURE OF THE WATER.

The temperature of the water has varied between 29° and 40° at Eastport, Maine, but between the extremes, 74° and 87° at Key West, Florida, the change being quite gradual as we proceed southward along the Atlantic coast. The range of temperature has increased from 5° in Maine to 13° along the South and Middle Atlantic coasts, but to 18°, 20° and 30° in the rivers and lakes in the interior of the country. The details, for all stations, are given in the table on Chart No. II.

ATMOSPHERIC ELECTRICITY.

Thunder-storms.—Displays of thunder and lightning have been least frequent in the Middle Atlantic States, where they have occurred on the 7th, 12th, 15th, 16th, 19th and 23d, and in southern New England, where they have occurred on the 1st, 2d, 8th, 9th, 12th, 15th, 19th, 20th, 24th, 29th and 30th. They have been most frequent in the Eastern Gulf States, Tennessee and the Ohio valley, the upper Mississippi and lower Missouri valleys, where they have occurred on from 16 to 20 days during the month.

Auroras.—The auroras most extensively visible were those of the 4th, in Connecticut, Maine, New York, Michigan, Wisconsin, Minnesota; on the 22d, in Connecticut, Maine, New Hampshire, Vermont, Massachusetts, New York, Ohio, Michigan, Wisconsin and Minnesota. Less extensive displays, were reported from two or more stations, on the 2d, 3d, 5th, 7th, 9th, 10th, 11th, 12th, 13th, 15th, 16th, 18th, 23d, 24th, 26th, 27th, 29th, 30th and 31st.

OPTICAL PHENOMENA.

(1) *Solar Halos* were observed at some stations on every day of the month but the 23d. The following is a list of those observed in two or more different States: 1st, Maine, Massachusetts, New Hampshire, New York, Connecticut, Georgia, and New Jersey; 2d, Iowa and Georgia; 3d, Illinois, Maine, Missouri, New York, North